Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Withdrawn) The use of an isolated polynucleotide in the development of a medicament for the prevention and treatment of diseases and medical conditions in which proton homeostasis is imbalanced; said polynucleotide is selected from one of the groups consisting of:
(a) an isolated polynucleotide comprising the polynucleotide sequence of human OGR1 (accession number: NM_003485.1), rat OGR1 (accession number: XM_234483), mouse OGR1 (accession number: NM_175493), bovine OGR1 (accession number: NM_174329), preferably human OGR1 (accession number: NM_003485.1), human GPR4 (accession number: NM_005282), mouse GPR4 (accession number: NM_175668), human TDAG8 (accession number: NM_003608) and mouse TDAG8 (accession number: NM_008152);
(b) an isolated polynucleotide encoding a proton sensing GPCR polypeptide sequence having at least 20% identity to the polypeptide sequence of SEQ ID NO: 1;
(c) an isolated polynucleotide encoding a proton sensing GPRC polypeptide sequence having at least 20% identity to the polypeptide sequence of SEQ ID NO: 3;
(d) an isolated polynucleotide encoding a proton sensing GPRC polypeptide sequence having at least 20% identity to the polypeptide sequence of SEQ ID NO: 4;
(f) an isolated polynucleotide comprising the polynucleotide sequence of human OGR1 (accession number: NM_003485.1), rat OGR1 (accession number: XM_234483), mouse OGR1 (accession number: NM_175493), bovine OGR1 (accession number: NM_174329), preferably human OGR1 (accession number: NM_003485.1), human GPR4 (accession number: NM_005282), mouse GPR4 (accession number: NM_175668), human TDAG8 (accession number: NM_003608) and mouse TDAG8 (accession number: NM_008152);
(g) the polynucleotide sequences of human OGR1 (accession number: NM_003485.1), rat OGR1 (accession number: XM_234483), mouse OGR1 (accession number: NM_175493), bovine OGR1 (accession number: NM_174329), preferably human OGR1 (accession number: NM_003485.1), human GPR4 (accession number: NM_005282), mouse GPR4 (accession

number: NM_175668), human TDAG8 (accession number: NM_003608) and mouse TDAG8 (accession number NM_008152); and

(h) polynucleotides in (a) to (g) which encode for a polypeptide that show a phi dependent Inositol phosphate formation in CCL39 hamster fibroblast cells or a pH dependent signal in the cAMP luciferase reporter assay in CHOK1 CRE-luc cells or CCL39 CRE-luc cells.

6. (Withdrawn) The use of an antibody, which specifically binds to a polypeptide of the claim 1, for the manufacture of a medicament for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced;

a pharmaceutical composition comprising an antibody for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalances, said antibody specifically binds to a polypeptide of the claim 1; or

a method of prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising administering to a subject in need of such prevention and/or treatment an effective amount of an antibody, said antibody specifically binds to a polypeptide of claim 1.

7. (currently amended) A method for screening ~~to identify~~ for a candidate compounds that antagonizes or agonizes a GPR4 related polypeptide selected among the group consisting of: ~~the proton sensing activity of the polypeptides according to any one of claims 1 to 4.~~

i) a polypeptide encoded by a polynucleotide comprising the polynucleotide sequence of human GPR4 (accession number: NM_005282);

ii) the polypeptide of SEQ ID NO: 3; or,

iii) a polypeptide having at least 95% identity to the polypeptide sequence of SEQ ID NO: 3.

said method comprising the step of contacting said GPR4 related polypeptide with a candidate compound under appropriate conditions, determining whether said candidate compound is able to increase or decrease a pH-dependent signal generated by said GPR4 related polypeptide wherein said candidate compound capable of increasing or decreasing said signal is a compound that agonizes or antagonizes said GPR4 related polypeptide, respectively.

8. (Cancelled)

9. (Cancelled)

10. (Withdrawn) A method of prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising administering to a subject in need of such prevention and/or treatment an effective amount of an antagonist obtainable from the method of claim 7.

11. (Withdrawn) A method of prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising administering to a subject in need of such prevention and/or treatment an effective amount of an agonist obtainable from the method of claim 8.

12. (Withdrawn) A pharmaceutical composition for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising an antagonist obtainable from the method of claim 7.

13. (Withdrawn) A pharmaceutical composition for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising an agonist obtainable from the method of claim 8.

14. (Withdrawn) A diagnostic kit comprising an antibody against a polypeptide according to claim 1.

15. (Withdrawn) A diagnostic kit comprising a pharmaceutical preparation for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalances, said pharmaceutical preparation comprising an antibody against a polypeptide according to claim 1.

16. (New) The method of Claim 7, wherein said pH dependent signal is measured in a cAMP luciferase reporter assay in stable cell lines expressing said GPR4-related protein under an acidic shift.

17. (New) The method of Claim 7, wherein said candidate compound decreases said pH-dependent signal, thereby antagonizing said GPR4 related polypeptide.

18. (New) The method of Claim 7, wherein said candidate compound increases said pH-dependent signal, thereby agonizing said GPR4 related polypeptide.